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INVESTIGATIONS INTO ASPECTS OF THE OZONE LAYER

Paper presented by the United States of America

Summary

"US investigations on the possible modification of the Ozone Layer by human activities, and resultant effects on the earth's biosphere, have emphasized the atmospheric chemistry and dynamics governing the distribution of ozone in the stratosphere. These investigations have permitted projections of ozone depletion, based primarily on calculations with time-dependent, one and two-dimensional models. The US National Academy of Sciences had estimated the projected steady state reduction of ozone, on the basis of 1973 chlorofluoromethane emissions, to be about 6 to 7.5 per cent with an overall range due to combined uncertainties of from 2 to 20 per cent.

"Chemical reaction rate input data for the modelling have been rechecked and improved by direct laboratory measurements. Field measurements have been used to check the validity of model projection by comparing projected and measured values of selected atmospheric chemical concentrations. Field measurements, including satellite techniques, have been made in the stratosphere of chlorofluoromethane, HCL, CLO, NO₂, HNO₃, N₂O, HO and CH₄, strengthening the foundations of the hypothesis indicating reduction of global ozone concentration.

"Emphasis has been renewed on investigations of biological and climatic effects of possible ozone diminution. The basic effort is on improved measurements of UV intensities and total ozone column with satellite and other techniques. Human health effects centre on corollation of UV dose and incidence of skin cancer generation. Nonhuman biological effects centre on the UV radiation sensitivity of biota and their ecosystems including agricultural crops and marine food chain elements and food sources. Climate

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effects, other than on UV flux, investigations centre on the relationship of regional changes of temperature and precipitation to changes in global average variables.

"Recent US Investigations of economics effects have focussed on examining the economic impacts of hypothetical aerosol regulatory scenarios with attention to possible alternatives for meeting industrial and consumer needs. These investigations are now being extended to the economic analysis of environmental consequences of possible future non-aerosol regulations."

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